

## Fundamentals of Pumping Seminar

The Fundamentals of Pumping course is a six-hour event designed to provide a solid underpinning of pump operation in a system.

The course provides the foundation of hydraulic terminology, mathematics, and the underlying concepts and principles that determine the performance of pumps within a piping system as a whole.

Attendees will learn key aspects of centrifugal and self-priming pumps, including theory of operation, how to read pump performance curves, net positive suction head (NPSH), cavitation, and how pump(s) and piping networks (systems) interact. The course is taught by well-trained individuals who can answer any question about how system changes can alter pump operation and the best way to respond with system or pump modifications.

Key topics include how to understand and get the most out of pumps. How to avoid cavitation by recognizing the causes and root failure analyses and how to effectively solve pump problems such as troubleshooting with gauges.

This course is designed to develop core competencies and essential skill sets, giving attendees the ability to take what they have learned and apply it directly back on the job. Coupled with more than eighty-five years of experience in the industry and collaborating with experts in the field of hydraulics, this course provides excellent comprehensive training on fundamentals of pumping.

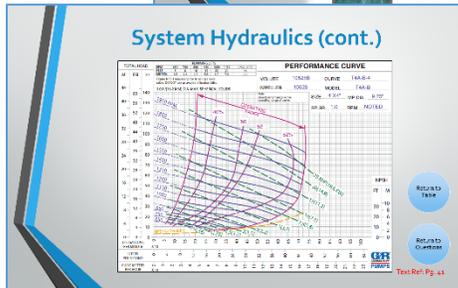
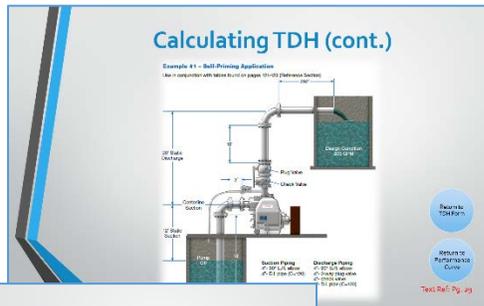


**ANYONE WORKING WITH PUMPING  
SYSTEMS CAN BENEFIT FROM THIS  
COURSE**

*Training to improve your understanding  
of pumps and systems to keep them  
running at optimal efficiency*

### Who Should Attend?

- Design Engineers
- Plant Engineers
- Facility Managers
- Maintenance Technicians
- Building Owners
- Plant operators
- Safety Engineers
- Recent College Graduates
- Pump Sales Representatives
- Anyone who selects, specifies, commissions, installs, operates, or maintains pumping systems.



## Course Outline

- Introduction
- Centrifugal Pump Basics
- Hydraulic Analysis (Calculating TDH)
- System Hydraulics
- Multiple Pump Operation (Parallel/Series)
- Net Positive Suction Head (NPSH)
- Pump Safety
- Pump Forensics (Troubleshooting)
- Sustainable Efficiencies

## What you will receive with Fundamentals of Pumping

**Course Workbook:** This course workbook has been developed with many useful guidelines and key points discussed during the course. Attendees will find this workbook an excellent resource for concepts taught during the course and applying them back on the job.

**Engineering Data Book:** This fourth edition booklet is jammed packed with several useful hydraulic tables and formulas. A must for anyone engaged in fluid mechanics or pump system designs.

**Course Certificate:** At the conclusion of the training course, attendees will be awarded an attractive certificate of recognition for completion with course content description included for confirmation of continued education credits.



**THE GORMAN-RUPP COMPANY - USA**  
 P.O. Box 1217  
 Mansfield, OH 44901-1217 | USA  
 Tel: 419.755.1011 | Fax: 419.755-1251  
 GRAcademy@gormanrupp.com

## Why Attend?

*Here is why you will want to attend Fundamentals of Pumping.*

### Learn to Identify Pump & System Challenges

– Attendees will learn to identify the real problems causing pump failures, instability, excessive power usage and how to increase sustained operating efficiencies.

### Locate areas where you can save money –

Gain a better understanding of how to minimize operation down time and maintenance cost achieving lowest total cost of ownership.

### Gain real world experience –

Attendees will gain real world experience that they can immediately apply what they have learned back in the workplace.

Combine theoretical knowledge and practical experience to gain a total picture of pumping systems.